THYMOPHYLLA TENUILOBA AND T. WRIGHTII (ASTERACEAE: TAGETEAE)

Guy L. Nesom
2925 Hartwood Drive
Fort Worth, TX 76109
www.guynesom.com

ABSTRACT

Thymophylla tenuiloba has generally been treated to include four varieties. Among these, *T. tenuiloba* var. *wrightii* (A. Gray) Strother is distinct in morphology and sympatric and non-intergrading with *T. tenuiloba* var. *tenuiloba*. It is appropriately treated at specific rank as *T. wrightii* (A. Gray) Small. *Thymophylla tenuiloba* var. *treculii* and var. *texana* differ from var. *tenuiloba* in minor features of pappus morphology and populational variation occurs in the same features; each is geographically distinct, however, and these three taxa are maintained at varietal rank. *Phytologia 91(2): 333-339 (August, 2009).*

KEY WORDS: *Thymophylla tenuiloba*, *Thymophylla wrightii*, Asteraceae, Tageteae, Texas

---

In Johnston's taxonomic overview of Texas *Dyssodia* (1956), he noted that *D. tenuiloba* (DC.) B.L. Rob., *D. wrightii* (A. Gray) B.L. Rob., *D. texana* Cory, and *D. treculii* (A. Gray) B.L. Rob. "are more closely related to each other than to other species. In details of involucre they are nearly identical; they differ in pappus-form, and to some extent in habit." Strother (1969) emphasized the similarities among these four taxa by combining them as varieties of a single species, *D. tenuiloba*. And so they have been treated since that time (Strother 1970, 2006), except for Turner (1996) and Turner et al. (2003), who combined var. *treculii* and var. *texana* with var. *tenuiloba*, simplifying the species to var. *tenuiloba* and var. *wrightii*. Robinson's treatment (1913) of *D. wrightii* and *D. treculii* at specific rank reflected his general transfer of names from *Hymenatherum* Cass. to *Dyssodia* Cav. rather than a refinement of species concepts. Strother's transfer

(1986) of all these taxa to *Thymophylla* Lag. has been supported by molecular evidence (Loockerman et al. 2003).

In contrast to the generally accepted taxonomy, there is good evidence to treat var. *wrightii* at specific rank. As documented by Strother (1969) and as confirmed here, var. *tenuiloba* and var. *wrightii* are sympatric (Fig. 1), and I find no evidence of hybridization where the two occur together. The two taxa also differ slightly in pappus morphology (see key below) and they are consistently different in leaf morphology. Var. *wrightii* has entire, mostly linear leaves while var. *tenuiloba* has pinnatisect leaves, and there is no indication that toothing or lobing appearing rarely on proximal leaves of var. *wrightii* results from gene flow from var. *tenuiloba*.

The two have been collected at the same site: Karnes Co.: 12 mi S of [Wilson] county line on Texas Hwy 80, 15 Apr 1965, *Strother 137* (TEX)—*Thymophylla wrightii* and *Strother 138* (TEX)—*T. tenuiloba*. Refugio Co.: 18 mi S of Woodsboro, 10 Apr 1965, *Strother 128* (TEX)—*Thymophylla wrightii* and *Strother 129* (TEX)—*T. tenuiloba*. At both localities, Strother identified the plants as different species when he made the collections; he later treated the two taxa at varietal rank. The two also have been collected at very close though not identical localities within their area of sympatry (e.g., Bee Co., San Patricio Co.; Fig. 1).

Chromosome number reports for *Thymophylla wrightii* all have been diploid, $2n = 16$ (Strother 1989). Plants of *T. tenuiloba* var. *tenuiloba* may be diploid, triploid, or tetraploid ($2n = 16$, 24, or 32), and populations may include a single ploidy level or mixtures of two or three ploidy levels. One population of var. *tenuiloba* from Webb Co. was observed to include diploids, triploids, and pentaploids. In the region of sympatry with *T. wrightii*, populations of *T. tenuiloba* are diploid or triploid or a mixture of the two levels (Strother 1989, Fig. 2). Circumstantial evidence indicates that triploids and perhaps other polyploids produce seeds apomictically. Knowledge of this aspect of biology strengthens the observation that *T. wrightii* and *T. tenuiloba* are genetically isolated where they occur in sympatry.

Status of *Thymophylla tenuiloba* var. *texana* and var. *treculii*.

In contrast to *Thymophylla wrightii, T. tenuiloba* var. *treculii* and *T. tenuiloba* var. *texana* differ from typical *T. tenuiloba* only in minor features of pappus morphology, and intergradation and populational variation occurs in the same features. Var. *treculii* and var. *texana* are geographically distinct (Figs. 1 and 2), however, and are appropriately treated at infraspecific rank within *T. tenuiloba*. Limited sampling indicates var. *texana* to be diploid, var. *treculii* to be tetraploid and pentaploid (Strother 1989).

Almost all collections of var. *treculii* in Texas have been made very close to the Rio Grande, where it occurs in close sympatry with var. *tenuiloba*. In its broader range in Coahuila and Nuevo León, var. *treculii* occurs alone, thus the area of sympatry along the Rio Grande is where the ranges of var. *treculii* and var. *tenuiloba* meet (Strother 1969, Fig. 19). Mixed populations and intergrades appear to be common in the area of sympatry, although most plants display one or the other of the pappus expressions. Northern outliers of var. *treculii* in Crockett, Sutton, and Uvalde counties may be relatively recent adventives dispersed along roadways, as hypothesized by Strother (1989) for var. *tenuiloba*.

Var. *texana* is rare in Texas and restricted to a few west-central counties, far disjunct from Mexican populations in referable to this entity (Strother 1969, Fig. 20). It apparently does not intergrade with other expressions of *Thymophylla tenuiloba* in Texas, but in Coahuila, plants technically referable to var. *texana* do apparently intergrade with var. *treculii*.

Taxonomic overview.

Morphological criteria for recognizing these taxa, as in the key below, are similar to those of Strother (2006).

1. Plants erect to ascending; **leaves** relatively lax, entire, oblong-linear to filiform, rarely those on the proximal 1/6–1/2 of stem with 2–4 pairs of linear teeth or lobes; **pappus** of 10–12 unequal pales 2–3 mm long, each terminating in a single bristle-like awn or (less commonly) pales of outer series bifid and terminating in a single bristle-like awn; Texas.

Thymophylla wrightii

1. Plants usually diffusely spreading to decumbent, sometimes erect; **leaves** rigid, pinnatisect into 7–11 subulate, filiform divisions; **pappus** variable.....**Thymophylla tenuiloba**

2a. Pappus of 10 pales, each 3–5-awned; Texas and Mexico (Tamaulipas).....**T. tenuiloba** var. **tenuiloba**

2b. Pappus of 10 pales in two series of 5 each, those of the inner series 2.5–3 mm long and each 1-awned from the middle of the often bifid apex, those of the outer series 0.8–1 mm long and awnless; Texas and Mexico (Coahuila, Nuevo León, Tamaulipas).**T. tenuiloba** var. **treculii**

2c. Pappus of 10 pales of subequal length in two series of 5 each, all awnless, or the inner 5 slightly longer and occasionally 1 or 2 of them 1-awned; Texas and Mexico (Coahuila).....**T. tenuiloba** var. **texana**

1. Thymophylla wrightii (A. Gray) Small, Fl. S.E. U.S., 1295, 1341. 1903. *Hymenatherum wrightii* A. Gray, Mem. Amer. Acad. Arts, n.s, 4(1): 89. 1849. *Dyssodia wrightii* (A. Gray) B.L. Rob., Proc. Amer. Acad. Arts 49: 508. 1913. *Dyssodia tenuiloba* var. *wrightii* (A. Gray) Strother, Univ. Calif. Publ. Bot. 48: 76. 1969. *Thymophylla tenuiloba* var. *wrightii* (A. Gray) Strother, Sida 11: 378. 1986. **Type**: USA. Texas. In dry post oak woods between the Rio Colorado and the Rio Guadalupe, *C. Wright s.n.* (holotype: GH).

2. Thymophylla tenuiloba (DC.) Small, Fl. S.E. U.S., 1295, 1341. 1903. *Hymenatherum tenuilobum* DC., Prodr. 5: 642. 1836. *Dyssodia tenuiloba* (DC.) B.L. Rob., Proc. Amer. Acad. Arts 49: 508. 1913. **Type**: USA. Texas. "In Mexico circa Bejar," [between Laredo and San Antonio], *Berlandier 2063* (holotype: G-DC; isotype: GH).

2a. **Thymophylla tenuiloba** var. **tenuiloba**

2b. **Thymophylla tenuiloba** var. **texana** (Cory) Strother, Sida 11: 378. 1986. *Dyssodia texana* Cory, Rhodora 49: 162. 1947. *Dyssodia tenuiloba* var. *texana* (Cory) Strother, Univ. Calif. Publ. Bot. 48: 76. 1969. **Type**: USA. Texas. Taylor Co.: Abilene, Camp Barkeley, grassland in stony clay soil, 26 Apr 1943, *W.L. Tolstead 7030* (holotype: GH; isotype: SMU!).

2c. **Thymophylla tenuiloba** var. **treculii** (A. Gray) Strother, Sida 11: 378. 1986. *Hymenatherum treculii* A. Gray, Proc. Amer. Acad. Arts 19: 42. 1883. *Dyssodia treculii* (A. Gray) B.L. Rob., Proc. Amer. Acad. Arts 49: 508. 1913. *Dyssodia tenuiloba* var. *treculii* (A. Gray) Strother, Univ. Calif. Publ. Bot. 48: 75. 1969. **Type**: USA. Texas. "SE Texas [near Eagle Pass], *A. Trecul s.n.* (holotype: GH).

ACKNOWLEDGEMENTS

This study is based on study of collections from SMU/BRIT and TEX/LL, the latter originally loaned to BRIT for study by a staff member who found other employment before she could complete the study. I'm grateful to John Strother for comments, though we don't agree on the taxonomy.

LITERATURE CITED

Johnston, M.C. 1956. The Texas species of *Dyssodia* (Compositae). Field & Lab. 24: 60–69.

Loockerman, D., B.L. Turner and R.K. Jansen. 2003. Phylogenetic relationships within the Tageteae (Asteraceae) based on nuclear ribsomal ITS and chloroplast ndhF gene sequences. Syst. Bot. 28: 191–2007.

Robinson, B.L. 1913. Diagnoses and transfers among the spermatophytes. Proc. Amer. Acad. Arts 49: 502–517.

Strother, J.L. 1969. Systematics of *Dyssodia.* Univ. Calif. Publ. Bot. 48: 1–88.

Strother, J.L. 1970. *Dyssodia.* Pp. 1680–1683. In D.S. Correll and M.C. Johnston, Manual of the Vascular Plants of Texas. Texas Research Foundation, Renner.

Strother, J.L. 1986. Renovation of *Dyssodia.* Sida 11: 371–378.

Strother, J.L. 1989. Chromosome numbers in *Thymophylla* (Compositae: Tageteae). Sida 13: 351–358.

Strother, J.L. 2006. *Thymophylla*. Pp. 221–222, Vol. 21. In: Flora of North America Editorial Committee (eds.). Flora of North America North of Mexico. Oxford University Press, New York and Oxford.

Turner, B.L. 1996. The Comps of Mexico. Vol. 6. Tageteae and Anthemideae. Phytologia Mem. 10:1–93.

Turner, B.L., H. Nichols, G. Denny and O. Doron. 2003. Atlas of the Vascular Plants of Texas. Vol. 1–Dicots. Sida, Bot. Miscellany, Vol. 24.

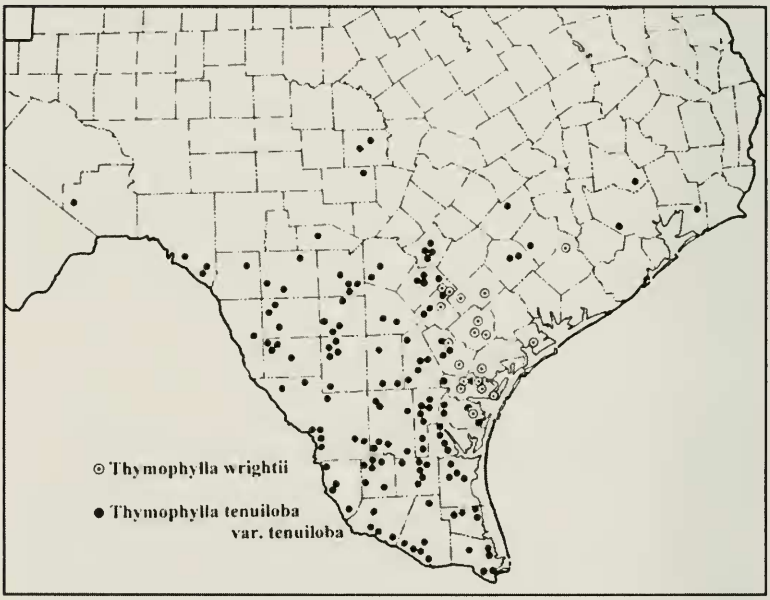

Figure 1. Distribution of *Thymophylla wrightii* and *T. tenuiloba* var. *tenuiloba* in Texas. Collections were first mapped on a large-scale highway map, then transferred to this format (also for Fig. 2). Var. *tenuiloba* ranges into Mexico; it also occurs as an adventive in the U.S.A. in Alabama, California, and Louisiana.

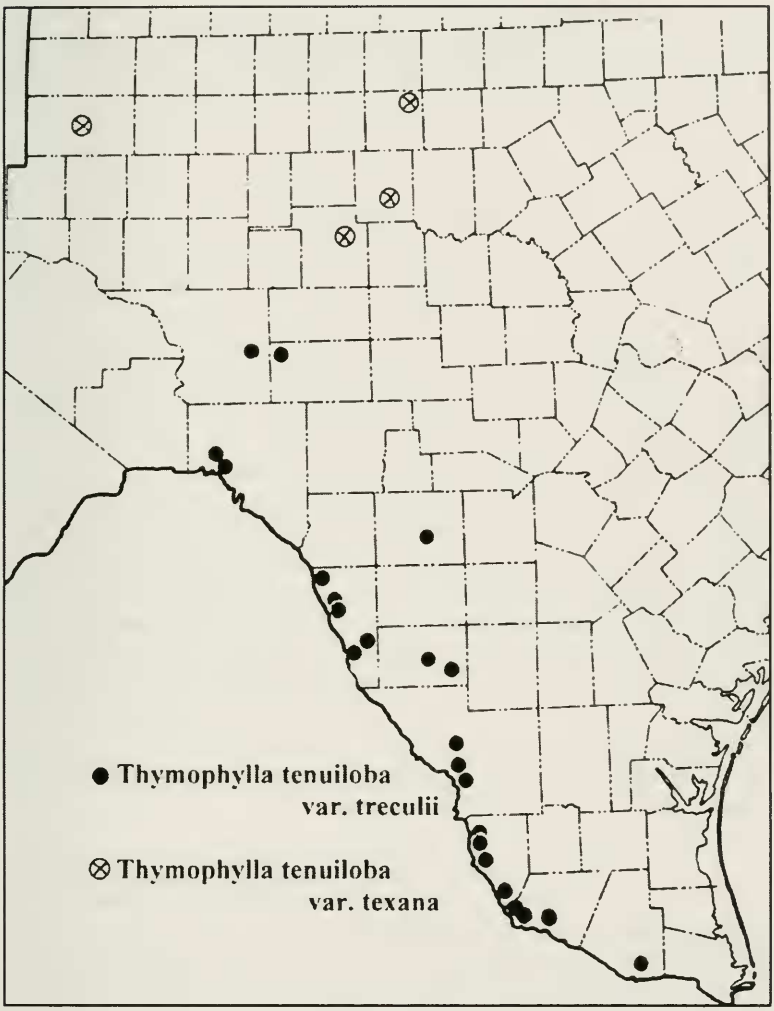

Figure 2. Distribution of *Thymophylla tenuiloba* var. *treculii* and var. *texana* in Texas.